

KELLOGG, HUBER, HANSEN, TODD, EVANS & FIGEL, P.L.L.C.

SUMNER SQUARE  
1615 M STREET, N.W.  
SUITE 400  
WASHINGTON, D.C. 20036-3209

(202) 326-7900

FACSIMILE:  
(202) 326-7999

November 4, 2009

FILED/ACCEPTED

NOV - 4 2009

Federal Communications Commission  
Office of the Secretary

**Via Hand Delivery & ECFS**

Marlene H. Dortch  
Office of the Secretary  
Federal Communications Commission  
445 12th Street, SW  
Suite TW-A325  
Washington, DC 20554

*Re: International Comparison and Consumer Survey Requirements in the Broadband Data Improvement Act, GN Docket No. 09-47;  
A National Broadband Plan for Our Future, GN Docket No. 09-51;  
Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, GN Docket No. 09-137*

Dear Ms. Dortch:

On behalf of Verizon and Verizon Wireless, attached are the Comments of Verizon and Verizon Wireless on Impact of Middle- and Second-Mile Access on Broadband Availability and Deployment ("Comments"), for filing in the above-captioned proceedings, in response to NBP Public Notice # 11.

The attachments to the Comments contain Confidential Information. Confidential Information has been marked "CONFIDENTIAL INFORMATION – SUBJECT TO PROTECTIVE ORDER IN GN DOCKET NO. 09-51 BEFORE THE FEDERAL COMMUNICATIONS COMMISSION." In accordance with the Protective Order in GN Docket No. 09-51, we are hand-delivering one copy of the Confidential Comments and two copies of the Redacted Comments.<sup>3</sup> In accordance with the Public Notice, we are filing the Redacted

<sup>3</sup> *A National Broadband Plan for Our Future*, Protective Order ¶ 7, GN Docket No. 09-51, DA 09-2187 (rel. Oct. 8, 2009).

**REDACTED – FOR PUBLIC INSPECTION**

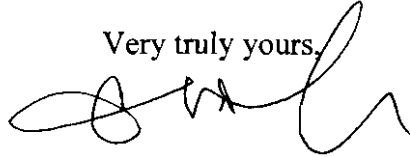
071

Comments using the Electronic Comment Filing System.<sup>4</sup> We are delivering under separate cover two copies of the Confidential Comments to Elvis Stumbergs or Simon Banyai.

We are also tendering to you certain copies of this letter for date-stamping purposes. Please date-stamp and return these materials.

Thank you for your assistance in this matter. Please contact me at 202-326-7930 if you have any questions regarding this filing.

Very truly yours,

A handwritten signature in black ink, appearing to read 'Evan T. Leo', with a stylized, cursive script.

Evan T. Leo

Attachment

---

<sup>4</sup> FCC Public Notice, *Comment Sought on Impact of Middle and Second Mile Access on Broadband Availability and Deployment*, NBP Public Notice #11, GN Docket Nos. 09-47, 09-51 & 09-137, DA 09-2186, at 8 (rel. Oct. 8, 2009).

**REDACTED – FOR PUBLIC INSPECTION**

**Before the  
Federal Communications Commission  
Washington, DC 20554**

In the Matter of	)	
	)	
International Comparison and Consumer	)	GN Docket No. 09-47
Survey Requirements in the Broadband	)	
Data Improvement Act	)	
	)	
A National Broadband Plan for Our Future	)	GN Docket No. 09-51
	)	
Inquiry Concerning the Deployment of	)	GN Docket No. 09-137
Advanced Telecommunications Capability	)	
to All Americans in a Reasonable and	)	
Timely Fashion	)	

**COMMENTS – NBP PUBLIC NOTICE # 11**

**COMMENTS OF VERIZON AND VERIZON WIRELESS ON  
IMPACT OF MIDDLE- AND SECOND-MILE ACCESS  
ON BROADBAND AVAILABILITY AND DEPLOYMENT**

Michael Glover  
*Of Counsel*

Edward Shakin  
Christopher M. Miller  
VERIZON  
1320 North Courthouse Road  
9th Floor  
Arlington, Virginia 22201  
(703) 351-3060

John T. Scott, III  
William D. Wallace  
VERIZON WIRELESS  
1300 I Street, NW  
Suite 400 West  
Washington, DC 20005

Evan T. Leo  
Kellogg, Huber, Hansen, Todd,  
Evans & Figel, P.L.L.C.  
1615 M Street, NW, Suite 400  
Washington, DC 20036  
(202) 326-7930

November 4, 2009

**REDACTED – FOR PUBLIC INSPECTION**

## TABLE OF CONTENTS

I.	INTRODUCTION AND SUMMARY .....	1
II.	THE COMMISSION SHOULD SUBSIDIZE MIDDLE-MILE AND SECOND-MILE FACILITIES IN SOME RURAL AREAS AND ELIMINATE OTHER BARRIERS TO BROADBAND DEPLOYMENT .....	4
A.	The Commission Should Establish a Targeted Funding Program for Middle- and Second-Mile Facilities in Some Rural Areas .....	5
B.	The Commission Should Establish a Single, Low Rate for All Broadband Pole Attachments and Address Right-of-Way Issues .....	11
III.	EXTENSIVE MIDDLE-MILE AND SECOND-MILE FACILITIES HAVE BEEN DEPLOYED IN MOST AREAS AND SUPPORT MULTIPLE COMPETITIVE BROADBAND ALTERNATIVES .....	13
A.	Providers of Middle-Mile and Second-Mile Facilities .....	13
B.	Middle Mile and Second Mile for Wireline Broadband .....	19
C.	Middle-Mile and Second-Mile Facilities for Wireless Broadband.....	29
IV.	RESPONSES TO SPECIFIC QUESTIONS.....	37
A.	Question 1: Network Components of Broadband Connectivity .....	37
B.	Question 2: Availability and Pricing of Middle- and Second-Mile Connectivity .....	40
C.	Question 3: Availability and Pricing of Internet Connectivity .....	43
D.	Question 4: Economics of Deployment .....	45
E.	Question 5: Nature of Competition and Availability of Alternatives .....	49
V.	CONCLUSION.....	54

## I. INTRODUCTION AND SUMMARY

Extending the benefit of broadband services to all Americans is one of the Commission's fundamental priorities, and one that Verizon fully supports. Broadband spurs innovation and economic growth; facilitates citizens' engagement with their communities and government officials; and will help to address critical social challenges like healthcare, education, and energy efficiency. Just as important, broadband availability will create good quality jobs and increase the competitiveness of each of the communities that broadband reaches.

As a result, it makes sense to focus on the "middle mile" and "second mile" challenges in areas that do not have the benefit of broadband today. There is no question that in order to connect some rural areas to the Internet, providers must deploy these middle-mile and/or second-mile facilities over considerable distances at significant cost. These challenges are further compounded by the fact that these areas do not have the population density necessary to generate the type of demand that generally justifies the large investment needed to build these facilities. Due to the combination of these factors, the availability or cost of middle-mile and/or second-mile facilities may "play an important if not gating role in the economics of broadband deployment" in these areas. Public Notice<sup>1</sup> at 1.

These are the challenges. Here are some solutions:

*First*, the Commission should subsidize directly part of the cost of deploying and operating middle- and second-mile facilities in some rural areas with universal service

---

<sup>1</sup> FCC Public Notice, *Comment Sought on Impact of Middle and Second Mile Access on Broadband Availability and Deployment*, NBP Public Notice #11, GN Docket Nos. 09-47, 09-51 & 09-137, DA 09-2186, at 1 (rel. Oct. 8, 2009) ("Public Notice").

funds. As Verizon<sup>2</sup> has previously proposed, the Commission should use project-based grants and/or adopt a program that targets support to broadband providers serving those geographic areas (and only those areas) where the economics of middle-mile and/or second-mile facilities pose a barrier to broadband deployment, based on objective and verifiable criteria. The level of support should be based on factors that drive the costs of deploying middle-mile and second-mile facilities, such as low density and long distances. The Commission should limit the size of the fund to provide stability and predictability to the program. The support program should also be temporary, such as an initial term of three years, because the need for such support is likely to decline over time as broadband deployment becomes more economical. Finally, this program should be part of a comprehensive reform of the high-cost universal service fund, which should include an overall cap on high-cost support and competitive bidding for wireless support.

*Second*, the Commission should adopt a low, uniform rate for all broadband pole attachments so that broadband providers can deploy facilities to rural areas at a reasonable price.

*Third*, the Commission should prohibit unreasonable fees or other terms that prevent or delay access to public right-of-ways, and should also outlaw other state and local permits that have the effect of impeding greater broadband deployment.

This three-part approach is tailored to address the economic issue at hand: how to bring broadband to those Americans who still do not have access. Determining how to

---

<sup>2</sup> In addition to Verizon Wireless, the Verizon companies participating in this filing (“Verizon”) are the regulated, wholly owned subsidiaries of Verizon Communications Inc.

serve Americans lacking access to broadband is separate and distinct from the market dynamics at play in the broader context for special access services, in which there are pockets of concentrated demand, at least one provider serving that demand, and multiple competitors also seeking to serve that demand. The distances at issue in unserved or underserved areas are much longer than typical special access connections and the problem in those areas is that there is dispersed demand (not concentrated demand) without even a single broadband provider willing or able to deploy or upgrade facilities to serve it. Thus, the regulatory issue here has nothing to do with the relative capabilities of incumbents and competitors, but instead is about ensuring that there is a single provider – regardless of whether it is an incumbent or competitor – that is able to make broadband services available to consumers.

Moreover, this approach recognizes that in areas of the country where most Americans live, extensive middle-mile and second-mile facilities have already been deployed and these facilities currently support multiple wireline and wireless broadband networks. The fact that more than 90 percent of the population has access to both wireline and wireless broadband services, and that the vast majority of consumers has two or more alternatives for each type of service, demonstrates that in most locations the availability and cost of such facilities enable robust broadband deployment and competition. These areas also are continuing to attract significant private investment for facilities to support the next generation of broadband services, including wireline technologies such as fiber-to-the-premises and DOCSIS 3.0 as well as fourth generation (“4G”) wireless technologies such as Long Term Evolution (“LTE”). In these areas, the market has already delivered broadband deployment, competition, and investment, and

**REDACTED – FOR PUBLIC INSPECTION**

no “solution” with respect to middle- and second-mile facilities is required. Instead, to bring broadband to Americans that still lack access to it, the Commission should develop a targeted solution designed to address those particular areas characterized by low density and long distances.

## **II. THE COMMISSION SHOULD SUBSIDIZE MIDDLE-MILE AND SECOND-MILE FACILITIES IN SOME RURAL AREAS AND ELIMINATE OTHER BARRIERS TO BROADBAND DEPLOYMENT**

At the September open meeting, the Broadband Initiative staff attempted to quantify how many consumers in rural and low-density pockets of the country still have limited broadband alternatives. The staff estimated that approximately 10 percent of U.S. households cannot obtain access to some form of wireline broadband service.<sup>3</sup> Cable modem service is unavailable in approximately 8 percent of U.S. households.<sup>4</sup> DSL is unavailable in approximately 17 percent of U.S. households.<sup>5</sup> Approximately 10 percent of Americans also do not yet have access to 3G mobile broadband services at their primary place of residence.<sup>6</sup> There is clearly still work to be done.

As the Public Notice correctly surmises, the cost and availability of middle- and second-mile facilities – generally together with other factors – have hindered the

---

<sup>3</sup> FCC, Broadband.gov National Broadband Plan, *September Commission Meeting*, at 34-35 (Sept. 29, 2009), [http://www.fcc.gov/Daily\\_Releases/Daily\\_Business/2009/db0929/DOC-293742A1.pdf](http://www.fcc.gov/Daily_Releases/Daily_Business/2009/db0929/DOC-293742A1.pdf) (“FCC September 2009 Broadband Study”).

<sup>4</sup> Comments of the National Cable & Telecommunications Association at 10, *A National Broadband Plan for Our Future*, GN Docket No. 09-51 (FCC filed June 8, 2009).

<sup>5</sup> Ind. Anal. & Tech. Div., Wireline Competition Bureau, FCC, *High-Speed Services for Internet Access: Status as of June 30, 2008*, at Table 14 (July 2009).

<sup>6</sup> CostQuest Associates, Inc., *US Ubiquitous Mobility Study*, at 4 (Apr. 17, 2008) (submitted to CTIA).

**REDACTED – FOR PUBLIC INSPECTION**

deployment of broadband in some instances. It can be very costly to deploy fiber or microwave from a high-speed network connection point to a rural area that is dozens or hundreds of miles away. In low-density areas, this translates into high per-unit costs that, if passed on to consumers, would make broadband too expensive for most. The higher facilities costs associated with long routes must be recovered from a much smaller base of customers, making broadband uneconomic in those areas.

The best way to address this obstacle to broadband deployment is to offset part of the costs to deploy or purchase middle- and/or second-mile facilities in these areas. Although these additional funds may not be sufficient to spur broadband deployment in all cases, experience with subsidy programs indicates that it will contribute significantly to bringing broadband to many areas with limited options today. In addition, the Commission can help address middle-mile and second-mile issues by establishing a single, low rate for all broadband pole attachments and also by removing obstacles that limit access to right-of-ways.

**A. The Commission Should Establish a Targeted Funding Program for Middle- and Second-Mile Facilities in Some Rural Areas**

Verizon recommends that the Commission adopt the following approach to foster the deployment of broadband in unserved areas:

***Project-Based Infrastructure Grants.*** Once projects for which American Recovery and Reinvestment Act (“ARRA”) funds have already been provided are underway, the Commission should evaluate whether there are any remaining areas of the nation in which there is inadequate access to high-capacity middle- and second-mile facilities, including whether sufficient progress is being made towards upgrading cell site

**REDACTED – FOR PUBLIC INSPECTION**

connections to support 4G wireless services. To the extent that the Commission identifies gaps, the Commission could either recommend that Congress appropriate additional funds for the National Telecommunications Information Administration (“NTIA”) and Rural Utilities Service (“RUS”) programs established pursuant to the ARRA, or it could establish a new, temporary program within the universal service fund to provide project-based support to help offset the cost to deploy middle- and second-mile facilities, including connections to cell sites. That program should target support to rural areas in which middle-mile and second-mile facilities do not have sufficient capacity to support broadband services and where such facilities would not be deployed in the foreseeable future without support.

***Middle-Mile Support for Broadband Providers.*** Alternatively, or in addition to, project-based infrastructure support, the Commission could provide support directly to broadband providers in rural areas to help them offset a portion of the recurring cost of middle-mile facilities. Even when high-capacity services are available, there may be rural areas in which, due to long distances and low population density, the per-customer cost of middle-mile facilities may be high enough to impinge on a rural broadband provider’s ability to offer service. To address cases in which the high recurring expense of middle-mile facilities limits a rural provider’s ability to offer broadband service, the Commission should establish a universal service program that would partially offset that expense. Providing support directly to broadband providers in rural areas would also foster demand for the construction of facilities in areas where they do not exist today.

This middle-mile support program should have the following attributes:

**REDACTED – FOR PUBLIC INSPECTION**

*First*, the program should target support only to those providers in geographic areas where the cost of middle- or second-mile facilities is a barrier to broadband deployment, based on objective and verifiable criteria. As noted, the main issue with the cost of middle- and second-mile facilities in rural areas is the relatively long distance – compared to urban areas – over which such facilities must extend and the relatively small customer base over which such costs may be recovered. Funding should be provided to address this specific economic issue. It should, in particular, be targeted to offset part of the cost of connecting the broadband provider’s service area to a nearby long-haul network point-of-presence (“POP”) or Internet Gateway. There is no need to provide support for long-haul network transport or Internet access service “port” costs as well, which as discussed below could be considered part of the middle mile as the Public Notice defines it. *See* § III.A, *infra*. Long-haul network transport costs are incurred by rural and urban providers alike and do not present a barrier to deployment of broadband services.

With respect to distance-sensitive middle- and second-mile facilities, the Commission must ensure that funding is provided only in the geographic areas where it is truly needed. Such areas will be limited. In responding to a 2008 survey, for example, the rural telephone companies that make up NTCA did not list middle-mile expense as one of the primary barriers to further broadband deployment.<sup>7</sup> Thus, before creating a new universal service program to fund middle-mile and second-mile deployment, the Commission should analyze unserved or underserved areas (for example, by using Form

---

<sup>7</sup> National Telecommunications Cooperative Association, *NTCA 2008 Broadband/Internet Availability Survey Report*, at 12, Figure 5 (Oct. 2008).

477 reports or the national broadband map that NTIA is assembling pursuant to the Broadband Data Improvement Act (“BDIA”)) in order to determine where the high cost of middle- and second-mile facilities likely explains the lack of broadband deployment. That analysis may show, for example, that there is generally a threshold distance (e.g., 100 miles from an Internet or long-haul network POP) beyond which broadband deployment is not generally available, or that such deployment is unlikely in areas with very low population density. Once the Commission establishes such criteria for determining where the high-cost of facilities is impairing broadband deployment, it can apply those criteria in deciding whether to award applications for funding support.

*Second*, the Commission should open the support program to applicants regardless of the technology they propose to use or their regulatory status. Eligibility criteria should be competitively and technologically neutral, and should be available to both wireless and wireline providers. The Commission should limit funding to avoid subsidizing duplicative networks.

*Third*, just as it is important to limit funding to those geographic areas where the economics do not support investment in middle- and second-mile facilities, the Commission also must ensure that the level of funding provided to a broadband provider in any given area is limited to offsetting a portion of the recurring costs associated with obtaining or deploying such facilities. This approach would be competitively and technologically neutral, and it would create incentives for providers to use the most efficient transmission services and technologies.

*Fourth*, the middle-mile support program should be temporary, such as an initial term of three years, given that the need for such support is likely to decline over time. A

**REDACTED – FOR PUBLIC INSPECTION**

broadband provider's per-unit costs decrease significantly as the number of customers it can serve over joint-use facilities increases. Accordingly, a broadband provider's need for universal service support will be greatest when the provider is beginning to offer service and its customer base is small, and will decline as the broadband provider gains customers. Other factors also may contribute to a decline in support requirements over time, such as additional funding the provider may receive.<sup>8</sup> The initial three-year term of the program should provide a broadband provider with sufficient time to enter an unserved or underserved area and – with the aid of the program's support – build up its customer base to the point that declining per-unit middle-mile costs make universal service support unnecessary.

*Finally*, the Commission should impose several requirements on support recipients further to ensure that middle-mile support is being used for its intended purpose. For example, the Commission should adopt certification requirements under which recipients would be required to certify on an annual basis that they are using middle-mile support only for the intended purpose.<sup>9</sup> The Commission should further require support recipients to file semiannual subscriber count reports for the supported area, using the same "speed tiers" that are used for Form 477 reporting. Subscriber count reporting will assist the Commission in verifying that support recipients are using middle-

---

<sup>8</sup> For example, the RUS Broadband Initiatives Program ("BIP") and NTIA Broadband Technology Opportunities Program ("BTOP") middle mile projects supported by ARRA funds will provide additional middle mile transport options that may shorten middle mile transport routes.

<sup>9</sup> Existing universal service programs require similar certifications. *See, e.g.*, 47 C.F.R. § 54.313(b).

mile support for the purpose for which it is intended, and will also allow the Commission to evaluate the effectiveness of its middle-mile support program.

**High-Cost Fund Reform.** Critically, any new funding program for middle-mile or second-mile facilities should be part of comprehensive reform of the high-cost fund, including an overall cap on high-cost support and competitive bidding for wireless support. As Verizon has previously explained, capping the high-cost fund is necessary because unrestrained growth in the fund imperils both the affordability and the sustainability of the Commission's universal service programs. The USF contribution factor reached an all-time high of 12.9 percent in the third quarter of 2009, and is likely to increase to at least 14.2 percent next quarter and perhaps even further as the contribution base declines.<sup>10</sup>

The Commission also should set a specific budget (which should be established once, and not every year) for this new support program that targets funding to middle- and second-mile facilities. Establishing a budget will help ensure that such funding is used efficiently. For example, under the current USF system funding can be used inefficiently by distributing universal service support to multiple carriers within a single study area.<sup>11</sup> Granting funds to more than one entity per area makes no economic sense. In areas where the economics do not support even a single provider, the Commission's

---

<sup>10</sup> See USAC, *Federal Universal Service Support Mechanisms Quarterly Contribution Base for the Fourth Quarter 2009*, at 7 (Sept. 1, 2009); USAC, *Federal Universal Service Support Mechanisms Quarterly Contribution Base for the Third Quarter 2009*, at 7 (June 1, 2009).

<sup>11</sup> See Comments of Verizon and Verizon Wireless at 26-27, *Federal-State Joint Board on Universal Service; High Cost Universal Service Support*, CC Docket No. 96-45, WC Docket No. 05-337 (FCC filed May 8, 2009).

goal should be to ensure that consumers in those areas will always have at least one broadband provider, not to create competition where it is not otherwise possible. This is best accomplished by directing funds to a single provider.

**B. The Commission Should Establish a Single, Low Rate for All Broadband Pole Attachments and Address Right-of-Way Issues**

In addition to the targeted support program, there are other steps the Commission should take to foster middle- and second-mile deployment in unserved areas.

First, the Commission should establish competitive and regulatory parity with respect to the rates that are charged to various providers of broadband services for pole attachments (including conduit)<sup>12</sup> by such providers. As Verizon has explained elsewhere, under the current system, ILECs are often forced to pay pole attachment rates that are at least two-to-three times higher than the rates that other carriers and cable television systems pay for the same attachments.<sup>13</sup> This system is neither rational nor sustainable in today's environment, where these various providers compete head-to-head to provide broadband services, and either have expanded or are expanding into one another's core businesses (cable into telephony and vice versa). Moreover, since rural ILECs are likely to play an important role in delivering broadband to unserved areas, fixing this broken system will help promote broadband deployment in these areas. The Commission should accordingly exercise its express statutory authority to establish a

---

<sup>12</sup> Under Section 224 of the Communications Act of 1934, the Commission has jurisdiction over pole attachments and conduit.

<sup>13</sup> See Comments of Verizon in Response to Notice of Proposed Rulemaking, *Implementation of Section 224 of the Act; Amendment of the Commission's Rules and Policies Governing Pole Attachments*, WC Docket No. 07-245, RM-11293 & RM-11303 (FCC filed Mar. 7, 2008).

uniform rate formula for all pole attachments by all providers of telecommunications services and cable television systems that offer broadband services.

Second, the Commission should use its authority under 47 U.S.C. § 253 to prohibit right-of-way fees that are unreasonable or discriminatory. As the Commission staff recently found, the cost of obtaining access to public right-of-ways – including lengthy administrative delays as well as “highly variable” and excessive fees – “may have a significant impact on fiber deployment.”<sup>14</sup> A case in point involves the demands that the New York State Thruway Authority (“NYSTA”) made to Williams Communications, Inc. After Williams invested more than \$31 million to build a backbone facility along the Thruway, NYSTA demanded that it pay millions of dollars in additional fees in order to make connections necessary to use that backbone. Verizon has experienced similar unreasonable practices and excessive fees, as it has set forth previously.<sup>15</sup> The Commission has previously construed Section 253 to preempt local action that “materially inhibits or limits the ability of any competitor or potential competitor to compete in a fair and balanced legal and regulatory environment.”<sup>16</sup> The

---

<sup>14</sup> *FCC September 2009 Broadband Study* at 50.

<sup>15</sup> See Comments of Verizon and Verizon Wireless, *Petition for Declaratory Ruling That Certain Right-of-Way Rents Imposed by the New York State Thruway Authority Are Preempted Under Section 253*, WC Docket No. 09-153 (FCC filed Oct. 15, 2009).

<sup>16</sup> *California Payphone Association Petition for Preemption of Ordinance No. 576 NS of the City of Huntington Park, California Pursuant to Section 253(d) of the Communications Act of 1934*, Memorandum Opinion and Order, 12 FCC Rcd 14191, ¶ 31 (1997).

**REDACTED – FOR PUBLIC INSPECTION**

Commission should now apply that standard to right-of-way fees, which will help promote broadband deployment.<sup>17</sup>

### **III. EXTENSIVE MIDDLE-MILE AND SECOND-MILE FACILITIES HAVE BEEN DEPLOYED IN MOST AREAS AND SUPPORT MULTIPLE COMPETITIVE BROADBAND ALTERNATIVES**

Although the Commission should act immediately to foster the deployment of middle- and second-mile facilities in limited rural areas, there is no problem to address in most of the country. In the concentrated areas where most Americans live, extensive middle-mile and second-mile facilities have been deployed to support multiple wireline and wireless broadband alternatives. The extensive deployment of these broadband services demonstrates that in most locations of the country, the availability and cost of middle- and second-mile facilities support extensive broadband deployment and competition.

#### **A. Providers of Middle-Mile and Second-Mile Facilities**

There is a wide array of providers of middle-mile and second-mile facilities. As an initial matter, many broadband providers – including incumbent LECs, cable companies, and wireless carriers – are self-providing all or part of their second-mile and middle-mile requirements using their own fiber networks, fixed microwave, or other wireless technologies. Alternatively, broadband providers may obtain fiber facilities or transmission services from a large number of providers, including cable companies, fixed

---

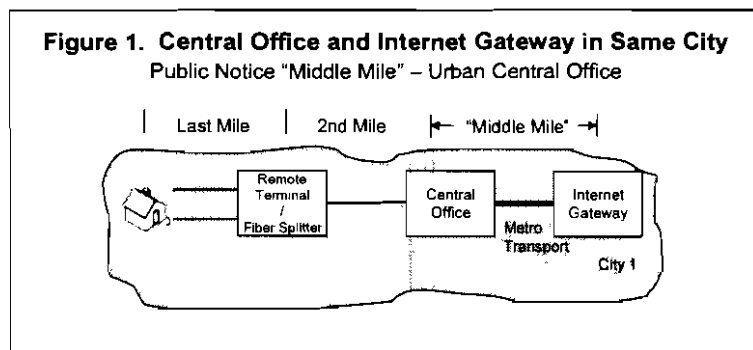
<sup>17</sup> Restrictions on wireless tower siting are an additional access issue that the Commission should address. As Verizon has explained, the Commission should take steps to expedite tower siting, for example, by placing reasonable time limits on state and local authority zoning decisions, and by clarifying that zoning ordinances that may have the effect of prohibiting wireless services violate Section 253(a) of the Act. See Comments of Verizon and Verizon Wireless on a National Broadband Plan at 5, *A National Broadband Plan for Our Future*, GN Docket No. 09-51, at 63-68 (FCC filed June 8, 2009).

**REDACTED – FOR PUBLIC INSPECTION**

wireless providers, competitive LECs, utility companies, regional fiber providers, national long-haul network operators, and incumbent LECs.

**Middle Mile.** The Public Notice defines the “middle mile” as the link between the central office, cable headend, or wireless mobile switching center (“MSC”), and an “Internet Gateway.” In some cases, the Public Notice’s definition of “middle mile” may cover a short link provided by a single provider of facilities or transmission services. In other cases, this definition may cover a circuit that is hundreds of miles long and traverses the facilities of multiple providers. In the vast majority of cases, however, broadband providers can choose from multiple competitive options for middle-mile facilities.

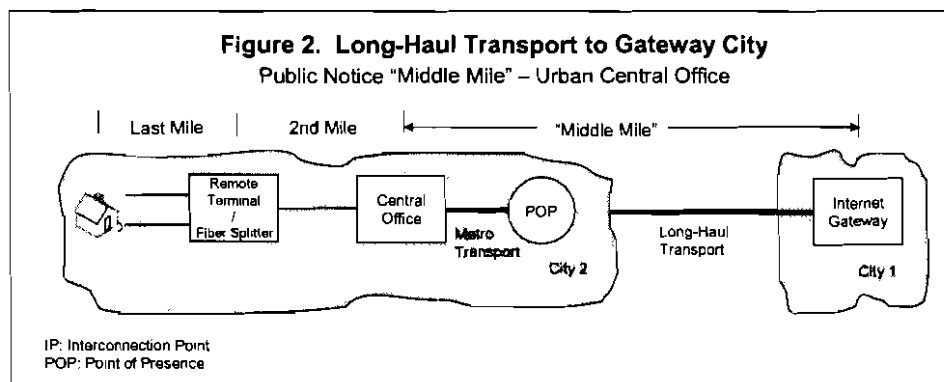
A broadband provider serving a city that has an Internet Gateway may require only a few miles of transport from its central office, cable headend, or MSC to the Gateway. *See Figure 1.* The broadband provider could self-provide that link, or it could obtain transmission service from a cable company, fixed wireless provider, competitive LEC, utility company, or incumbent LEC.



If the broadband provider is serving a city that does not have an Internet Gateway, but is served by a long-haul network operator that has deployed a POP in that city, then

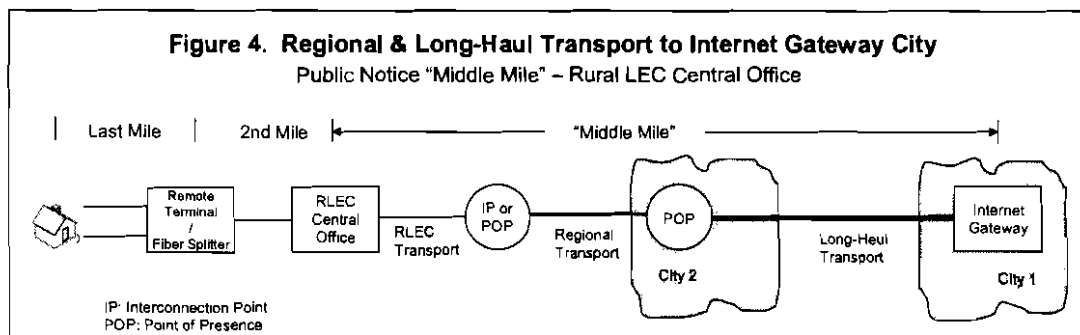
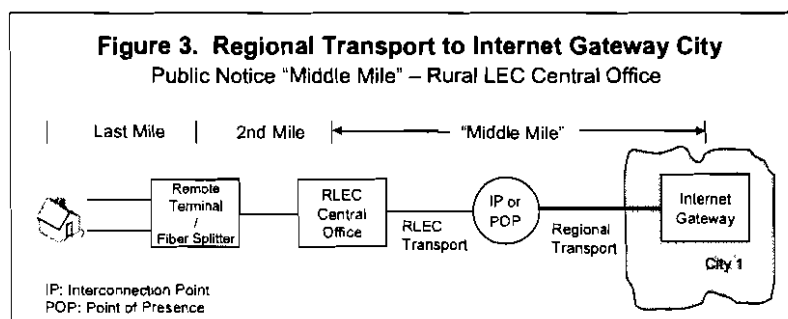
**REDACTED – FOR PUBLIC INSPECTION**

the “middle mile” as it is defined by the Public Notice would include both the connection to the POP and transport over the long-haul network to the Internet Gateway. *See Figure 2.* There are multiple national long-haul network operators that provide connections to long-haul POPs in virtually all cities and larger towns throughout the nation. Those providers include Verizon, AT&T, Sprint, Qwest, Global Crossing, Level 3, and XO. Moreover, as noted above, long-haul costs are not unique to rural broadband providers, but are instead borne equally by urban and rural broadband providers alike.



If the central office, headend, or MSC is in a rural area or is in a smaller city or town that does not have a long-haul network POP or Internet Gateway, then the “middle mile” as defined by the Public Notice would also include facilities connecting to a city with a Gateway or a long-haul POP. *See Figures 3 & 4.* Regional network operators have constructed networks that link larger cities to smaller cities and towns. Some of these network operators focus on providing services within a single state, while others, such as 360 Networks, have built networks that span several states.

**REDACTED – FOR PUBLIC INSPECTION**



In some states, rural incumbent LECs have formed consortia to deploy regional networks, to spread the costs of such facilities over a larger base and make them more economic.<sup>18</sup> Statewide fiber networks owned by rural LECs or consortia of rural LECs now operate in at least 20 states.<sup>19</sup> Indatel is an alliance of more than 20 “wholesale

<sup>18</sup> See *Second 706 Report* ¶ 24.

<sup>19</sup> These states are: Idaho (Syringa Networks); Montana (Vision Net); Utah (Western FiberNet); North Dakota (Dakota Carrier Network); South Dakota (South Dakota Network); Wyoming (ACT); Minnesota (Aurora Fiber Networks and Enventis); Iowa (Iowa Network Services); Missouri (Missouri Network Alliance); Oklahoma (MBO); Texas (Texas Lone Star Network); Wisconsin (Wisconsin Independent Network); Michigan (Great Lakes Comnet and Peninsula Fiber Network); Illinois (Illinois Network Alliance); Indiana (Indiana Fiber Network); Ohio (Broadband Network Group); Tennessee (Iris Networks); Georgia (US Carrier); South Carolina (PalmettoNet); and New York (Independent Optical Network). See Indatel Group, *Member Map*, <http://www.indatelgroup.org/MemberMap.html>.

carriers” that “provid[e] fiber connectivity to rural America.”<sup>20</sup> These fiber networks provide high-capacity transmission services to rural areas,<sup>21</sup> linking rural areas to each other and also to long-haul network points of presence and Internet hubs in urban areas.<sup>22</sup> Notably, the 20 states with rural LEC-operated statewide networks include many large midwestern and western states whose middle-mile routes are among the longest in the nation. In addition to the rural LEC consortia, regional network operators include Zayo Bandwidth, US Signal, and KDL. Incumbent LECs also can provide such regional transmission services. And further expansion of regional networks will follow the award of grants and loans pursuant to the American Recovery and Reinvestment Act of 2009 (“ARRA”); applicants in many states are seeking NTIA and RUS grants for regional “middle mile” projects.<sup>23</sup>

---

<sup>20</sup> Indatel Group, *Welcome to Indatel Group*, <http://www.indatelogroup.org/>. A fiber network map of Indatel members can be found at: <http://www.indatelogroup.org/NetworkMappage.html>.

<sup>21</sup> Wisconsin Independent Network advertises that it “has added over 2500 miles of fiber network, building nine SONET OC-48 rings and adding fifty new points of presence, many in rural Wisconsin.” Wisconsin Independent Network also states that it offers “private line services at T1, DS3, OC-n and Ethernet rates, in addition to wavelength services throughout Wisconsin and eastern Minnesota, and northern Illinois.” Wisconsin Independent Network, *About Us*, <http://www.wins.net/aboutus/welcome/index.html>.

<sup>22</sup> Utah’s Western FiberNet, for example, advertises that it has “established a centralized Point-of-Presence in Salt Lake City (‘SLC’) and many of the world’s largest telecommunications carriers have established their own interconnection presence at the SLC hub and now give [Western FiberNet] the ability to offer a full range of ‘big pipe’ data services, including carrier-level Internet and Internet II connections.” See <http://www.westernfiber.net/about.php>.

<sup>23</sup> For example, South Dakota Network is seeking support to “upgrade its middle mile network to enable delivery of 10 Megabit service to all end users”; Peninsula Fiber Network is seeking support to “[i]nstall fiber optic cable to unserved and underserved areas in Upper Peninsula” of Michigan; United Utilities Inc. is seeking support to “provide middle mile connectivity to 65 communities in southwestern Alaska . . . over a

**REDACTED – FOR PUBLIC INSPECTION**

Because the Commission's definition of middle mile can cover the entire path from a rural LEC central office to an Internet Gateway in a major city, the "middle mile" can encompass multiple providers' facilities. A rural LEC's broadband traffic may ride over the rural LEC's own transmission facilities to a regional fiber network's point of presence, then over the regional fiber provider's network to a long-haul provider's point of presence in a larger town or city, and then over the long-haul network provider's network to an Internet Gateway in a different city.

**Second Mile.** For wireline broadband providers, the facilities defined by the Public Notice as "second mile" are relatively limited in scope, covering only the link from a LEC remote terminal or fiber splitter to a central office or from a cable node or fiber splitter to a cable headend. As discussed in more detail below, LECs and cable companies typically self-provision the second mile segment.

For wireless broadband providers, the Public Notice defines the "second mile" as the link between a "base transceiver station," *i.e.*, cell site, and the MSC.<sup>24</sup> In some cases, wireless carriers self-provision this second mile, or part of it, using fixed microwave.

Alternatively, as discussed in more detail below, wireless carriers can obtain second-mile

---

combination of undersea fiber, terrestrial fiber, and microwave links." See NTIA, *Broadband USA: Search Applications*, <http://www.ntia.doc.gov/broadbandgrants/applications/results.htm>.

<sup>24</sup> Because an MSC may serve a large geographic area, the Public Notice's definition of "second mile" may cover a longer circuit for wireless carriers than it does for many wireline carriers. In fact, the Public Notice's definition of second mile for wireless carriers may encompass transport services and facilities that fall within the definition of "middle mile" for a wireline broadband provider. If, for example, an incumbent LEC provides a wireless broadband provider with wholesale "second mile" transport from a cell site to the wireless carrier's MSC, that circuit may include transport between LEC central offices. Under the Public Notice's definition, such interoffice transport would be considered part of the "middle mile" if used in the provision of LEC broadband services.

**REDACTED – FOR PUBLIC INSPECTION**

facilities or transmission services in the areas where demand is most concentrated from an array of competing providers, including cable companies, fixed wireless providers, competitive LECs, and incumbent LECs.

#### **B. Middle Mile and Second Mile for Wireline Broadband**

**Cable.** Cable operators have supplied the middle mile and second mile in their cable modem networks using a combination of self-provisioning and facilities obtained from third parties. Cable operators have generally self-supplied the links the Public Notice classifies as the second mile. Since the 1990s, cable operators have invested more than \$145 billion to upgrade their networks to a hybrid-fiber coaxial architecture in which fiber runs from a cable headend to a neighborhood node that typically serves anywhere from a few dozen to a few hundred homes.<sup>25</sup> Cable operators also have indicated that they have deployed extensive fiber facilities between their headends and Internet Gateways, links that the Public Notice classifies as the middle mile.<sup>26</sup> In addition, various third parties (such as Level 3 and Zayo) also provide these middle-mile

---

<sup>25</sup> See, e.g., Comments of the National Cable & Telecommunications Association at 1, *A National Broadband Plan for Our Future*, GN Docket No. 09-51 (FCC filed June 8, 2009) (the cable industry has invested “over \$145 billion since 1996 to build two-way interactive networks with fiber optic technology”).

<sup>26</sup> See, e.g., Mike Robuck, *Cox Business Connects Fiber to SuperNap Data Center* (July 23, 2009), <http://www.cedmagazine.com/News-Cox-Business-connects-fiber-SuperNap-data-center-072309.aspx> (“Cox Business has extended its fiber network into the SuperNap colocation facility. . . . Last week, Cox Business extended its fiber into i/o Data Centers’ Phoenix One colocation facility, which has more than 530,000 square-feet of data center space.”); Sean Buckley, *Can Cable Survive Without Fiber-to-the-x?*, Telecommunications Online (Feb. 18, 2009), [http://www.telecommagazine.com/search/article.asp?HH\\_ID=AR\\_4857](http://www.telecommagazine.com/search/article.asp?HH_ID=AR_4857) (“[R]eports have emerged that Time Warner Cable has issued a Request for Information (RFI) for FTTP equipment options (i.e., Radio Frequency over Glass (i.e., RFoG), EPON, and 10 GigEPON). The key with these options is that they are more evolutionary in their ability to let the cable operator leverage their existing head-ends and other related equipment.”).

**REDACTED – FOR PUBLIC INSPECTION**

connections for cable operators.<sup>27</sup> Because cable networks typically use fiber in both the middle and second mile, these facilities are capable of supporting not only current broadband services and levels of demand, but also more advanced technologies such as DOCSIS 3.0 and the increased demand that is likely to follow the adoption of these services.

The extensive availability of cable modem service and the significant investment now taking place to upgrade these services indicate that neither the availability nor cost of middle- and second-mile facilities has been a significant issue in deploying these services in most areas of the country. Cable modem service is now available to more than 92 percent of U.S. households, up from 46 percent at the start of the decade.<sup>28</sup> The five major cable operators – which together pass approximately 87 percent of all U.S. households – are collectively offering cable modem service to approximately 99 percent of the homes they pass.<sup>29</sup> Cable operators are offering broadband service extensively in

---

<sup>27</sup> Comcast Press Release, *Comcast Extends National Fiber Infrastructure* (Dec. 7, 2004) (Announcing long-term agreement with Level 3 to provide inter-city and metro dark fiber as part of Comcast's extension of its fiber footprint: "This backbone ensures that Comcast has a technically advanced and fully upgradeable nationwide broadband network – today and in the future – over which it can deliver new and enhanced services to its customers."); Level 3, *Cable Operators*, <http://www.level3.com/index.cfm?pageID=129> ("Level 3 is trusted by some of the top U.S. cable operators to help them connect to new growth possibilities. With a dedicated team of cable experts, and the powerful Level 3 Network foundation, we can help you achieve your strategies for future growth."); Zayo Bandwidth, *Zayo Bandwidth Solutions: CATV*, at 1 (2009), <http://www.zayo.com/files/en/user/cms/ZB-Solutions-CATV.pdf> ("Zayo provides fiber-based bandwidth services to four of the five top Cable providers in the U.S.").

<sup>28</sup> Comments of the National Cable & Telecommunications Association at 10, *A National Broadband Plan for Our Future*, GN Docket No. 09-51 (FCC filed June 8, 2009).

<sup>29</sup> See Comcast Corp., *Trending Schedules*, <http://files.shareholder.com/downloads/CMCSA/753959014x0x313101/cef5c244-14d8-4a13-a992-b6c057c50141/trending2q09.pdf>; Time Warner Cable, *Trending Schedules*,

**REDACTED – FOR PUBLIC INSPECTION**

rural areas, to approximately 15-20 million households according to the National Cable & Telecommunications Association (“NCTA”).<sup>30</sup> And many of these rural offerings provide “speeds comparable to or better than those available in more populated areas.”<sup>31</sup>

Until recently, most high-speed cable networks used DOCSIS 2.0 technology, which supports advertised broadband speeds that typically range from 7 Mbps to 15 Mbps downstream and from 768 kbps to 3 Mbps upstream (or higher in some cases).<sup>32</sup> Cable operators have recently begun upgrading their networks to DOCSIS 3.0 technology, which supports advertised downstream speeds beginning at 50 Mbps downstream or

---

*Reconciliations and Other Financial Information*, at Schedule 3, [http://files.shareholder.com/downloads/TWC/401404825x0x309454/EB92B01F-D410-4580-A6A9-A0282C3693F2/TWC\\_Trending\\_Schedules\\_Q2\\_2009\\_FINAL.PDF](http://files.shareholder.com/downloads/TWC/401404825x0x309454/EB92B01F-D410-4580-A6A9-A0282C3693F2/TWC_Trending_Schedules_Q2_2009_FINAL.PDF); Benjamin Swinburne et al., Morgan Stanley, *Downgrade: This Defense Not the Best Offense*, at 47, Exhibit 72, 48, Exhibit 73 & 51, Exhibit 76 (Jan. 23, 2009) (estimate of total U.S. households and year-end 2008 estimates for Cox); Charter Communications, *2Q Financial Addendum*, <http://phx.corporate-ir.net/External.File?item=UGFyZW50SUQ9MTI1MDZ8Q2hpbGRJRD0tMXxUeXB1PTM=&t=1> (2Q09); Cablevision Press Release, *Cablevision Systems Corporation Reports Second Quarter 2009 Results* (July 30, 2009).

<sup>30</sup> Letter from Steven Morris, NCTA, to Marlene Dortch, FCC, GN Docket No. 09-29 (Apr. 10, 2009) (“cable operators make broadband service available to approximately 15 to 20 million rural households”).

<sup>31</sup> *Id.* (providing examples).

<sup>32</sup> See, e.g., John Hodulik et al., UBS, *Sorting Through the Digital Transition*, at 9 (Sept. 3, 2009); David Barden et al., Bank of America/Merrill Lynch, *Battle for the Bundle: Pressure Eases As Discounts Rolled Back*, at 16, Table 11 (Oct. 21, 2009). See also Comments of Free Press at Fig. 3, *Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps To Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Information Act*, GN Docket No. 09-137 (FCC filed Sept. 4, 2009) (as of August 2009, offerings by providers using DOCSIS 2.0 ranged in speeds from up to 15 Mbps downstream/2 Mbps upstream to 20 Mbps downstream/1.5 Mbps upstream); Optimum Online, *Optimum Online Boost*, <http://www.optimum.com/order/boost/> (Cablevision offers speeds up to 30 Mbps downstream/5 Mbps upstream).

REDACTED – FOR PUBLIC INSPECTION